SUBJECT DATA SHEET AND REQUIREMENTS

last modified: 20th May 2016

LARGE EDDY SIMULATION (PhD)

NAGY ÖRVÉNY SZIMULÁCIÓ (PhD)

1	Code	Semester Nr. or fall/spring	Contact hours/week (lect.+semin.+lab.)	Requirements p / e / s	Credit	Language
	BMEGEÁT4A34	1.(2.*) fall/spring	2+0+0	e	3	English

*: in case of enrolment in fall

2. Subject's responsible:

Name:	Title:	Affiliation (Department):
Dr. Gergely KRISTÓF	associate professor	Dept. of Fluid Mechanics

3. Lecturer:

Name:	Title:	Affiliation (Department):
Dr. Máté Márton LOHÁSZ	invited lecturer /PhD/	Dept. of Fluid Mechanics

4. Thematic background of the subject:
physics, fluid dynamics

5. Compulsory / suggested prerequisites:
Compulsory: -
Suggested: -

6. Main aims and objectives, learning outcomes of the subject:
The course aims to introduce students to the PhD-level areas of fluid dynamics, according to the individual doctoral research topic and interest, with respect to the following (ch.8.) thematic description, in consultation with the lecturer.

7. Method of education:
lecture 2h/w, and private consultation

8. Detailed thematic description of the subject:
Engineering motivations.
Filters for incompressible Navier-Stokes equation.
Properties of basic filters.
Numerical requirements of simulation.
Strategies for under-grid-resolution modelling.
Interaction between numerical and modelling errors.
Practical aspects of simulation.
Special boundary conditions for Large Eddy Simulation: setting of the inlet turbulence.
Hybrid and zonal LES/RANS approaches.
Evaluation of results.
Topological description of flow.
Methods for vortex detection.

Industrial case studies.
Introduction to numerical aeroacoustics.
Large Eddy Simulation in aeroacoustics.

9. Requirements and grading
a) in term-period
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b) in examination period
Written and/or oral exam. Totally max. achievable 100 scores equal to 100% as base of the final grading. Minimum 40 %.
Grading: 0%-39%: fail(1); 40%-54% pass(2), 55%-69%: satisfactory (3), 70%-84%: good(4), 85%-100%: excellent (5)

c) The students are subject to disciplinary measures against the application of unauthorized means at mid-terms, term-end exams and homework and the application of the 1/2013. (I.30.) Dean's Order must be followed.

10. Retake and repeat
Due to the Code of Studies and Exams of BME. Any further movements are due to the Code of Studies and Exams of BME.

11. Consulting opportunities:
Consultation hours: by email appointments and as it is indicated on the department's website.

12. Reference literature (compulsory, recommended):

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- Downloadable materials: www.ara.bme.hu/oktatas/tantargy/NEPTUN/BMEGEAT4A34

13. Home study required to pass the subject:

Contact hours	28	h/semester
Home study for the courses	28	h/semester
Home study for the mid-semester checks	-	h/check
Preparation of mid-semester homework	-	h/homework
Home study of the allotted written notes	20	h/semester
Home study for the exam	28	h/semester
Totally:	90	h/semester

14. The data sheet and the requirements are prepared by:

Name:	Title:	Affiliation (Department):
Dr. Máté Márton LOHÁSZ	invited lecturer /PhD/	Dept. of Fluid Mechanics